

FACT SHEET FOR STATE WASTE DISCHARGE
PERMIT NO. ST-9087

TESSENDERLO KERLEY, INC.

SUMMARY

Tessenderlo Kerley, Inc. is seeking renewal of its State Waste Discharge Permit for the fertilizer and pesticide production facility in Finley, Washington. The discharge consists of cooling tower blowdown water. The discharge is land applied to an adjacent agricultural field. The permit requires monitoring of land applied cooling water. The permit also requires monitoring of the production process well-water, in order to ascertain effects of the facility's operations on the ground water quality of the State.

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INTRODUCTION

This fact sheet is a companion document to the State Waste Discharge Permit No. ST-9087. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the State is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Tessengerlo Kerley, Inc.
Facility Name and Address	46807 South Piert Road Kennewick, WA 99337
Type of Facility	Production of agricultural fertilizers and pesticides
Type of Treatment	Land application
Discharge Location	Latitude: 46° 8' 25" N Longitude: 119° 00' 31" W
Legal Description of Application Area	SW ¹ / ₄ , Section 25, Township 8 North, Range 30 E.W.M.
Contact at Facility	Name: Jeff Strickland Telephone #: (509) 586-9148
Responsible Official	Name: D. Kenneth Gagon Title: Vice President: Manufacturing and Technical Services Address: 2255 N. 44 th Street, Suite 300 Phoenix, Arizona 85008-3279 Telephone #: (602) 889-8300

BACKGROUND INFORMATION

The Finley, Washington facility of Tessenderlo Kerley, Inc., manufactures sulfur-based fertilizers, two pesticides and a metal scavenger. Fertilizer products include ammonium thiosulfate and ammonium polysulfide solutions. Pesticide products include Vapam (a sodium methylthiocarbamate) and Enzone (a tetrathiocarbonate). The metal scavenger is Kermat, a sodium dimethylthiocarbamate, used in wastewater treatment.

The facility is located about 10 miles southeast of Kennewick, Washington, at the intersection of Piert and Riek Roads, near the west bank of the Columbia River

The facility consists of buildings, which house offices, maintenance shops, pump house, lunch room and restrooms. Production occurs in the center of the facility, in large metal reactor vessels connected together with pipes. The production area containing the reactor vessels is exposed, with a concrete deck. The production area's concrete pad is intended to serve as secondary containment in the event of a spill.

Raw materials and finished products are stored onsite in large steel storage tanks. Also located on the property are facilities for loading and unloading tank trucks and railway cars.

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The Kennewick area receives approximately 8 inches of precipitation annually. Stormwater falling on the paved production area is conveyed through floor drains, stored in a tank, treated if necessary, and used in the production process. Sanitary wastewater is discharged to an onsite septic tank and drainfield system, which is under the jurisdiction of the Benton County Health Department.

DESCRIPTION OF THE FACILITY

History

The Permittee's first State Wastewater Discharge Permit was issued on June 12, 1990. At that time the company was known as Kerley Ag Products, Inc. The 1990 permit authorized a daily average discharge of 0.717 MGD of non-contact cooling water. Since then, the Permittee has implemented process changes that has reduced the volume of the non-contact cooling water discharged to less than 500 gallons per day, on the average.

Industrial Processes

The facility operates up to 24 hours a day, 7 days a week, 52 weeks a year, depending on product demand. Production is generally highest during the early part of the agricultural growing season.

In general, the manufacturing process for each product involves mixing, heating, and cooling of raw materials in reactor vessels. Some of the process reactions are exothermic, requiring cooling of the product in heat exchangers. One of the cooling towers produces blow down water, which is discharged to a sprayfield. This wastewater is the Permittee's only authorized discharge.

Water soluble chemicals and fertilizers that may be present at the facility include:

- sodium hydroxide – caustic
- mono-methylamine
- dimethylamine
- sodium hydrosulfide
- metam sodium
- sodium dimethyldithiocarbamate
- potassium thiosulfate
- ammonium polysulfide
- potassium polysulfide
- calcium thiosulfide
- ammonium sulfide
- carbon disulfide
- ammonium thiosulfide

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Some of these chemicals may present a risk to ground water and of violating State ground water criteria if spilled or discharged to ground.

An average of 455 gallons per day of wastewater is generated several times per week, when the cooling tower piping is flushed.

Distribution System (Sprayfield)

The Permittee owns approximately 80 acres of agricultural fields, adjacent to the production facility, which are available for land treatment of the discharge. However, the cooling blowdown wastewater is currently applied through a single sprinkler, and utilizes only a very small portion of these 80 acres. During an inspection in July of 2003 the sprinkled wastewater was being applied to an area approximately 75 feet in diameter.

GROUND WATER

The depth to ground water in this area is about twenty feet.

PERMIT STATUS

The previous permit for this facility was issued on June 12, 1998.

An original application for permit renewal was accepted by the Department on April 26, 2000. Another application for permit renewal was submitted to the Department on June 19, 2003 and accepted by the Department on August 25, 2003.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on July 22, 2003. The compliance inspection was conducted to gather information for writing the facility's new permit.

During the history of the previous permit, the Permittee has not remained in compliance based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department. The permit's only limit is on the cooling water discharge's pH. This discharge is limited to the range of 6.5 to 8.5. In the past year and half (January 2002 through June 2003), the discharge has exceeded the 8.5 limit 26 times out of 36 sampling events. The maximum reported pH discharge was 9.0 S.U.

The Permittee failed to submit Discharge Monitoring Reports from the first required submittal date of September 15, 1998 through December 2001.

EXPIRATION DATE:

The previous permit required the submittal of a Chemical Analysis of Effluent Report (S7.A). The analysis had a submittal date of January 15, 1999, but the analysis was not received by the Department until June 24, 2003.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports from January 2002 through June 2003. The wastewater discharge prior to land application is characterized for the following parameters:

Table 1: DMR Wastewater Characterization

Parameter	Average	Minimum	Maximum
Flow	455 gpd	0 gpd	3796 gpd
pH	NA	8.1	9.0

The effluent consists of cooling tower blowdown water, which is distributed to the sprayfield. The results of the Chemical Analysis of Effluent Report are given below:

Table 2: Wastewater Characterization

Parameter	Concentration	Unit
Conductivity	980	µS/cm
TDS	720	mg/L
Total Coliform	186	colonies/100ml
Sodium	140	mg/L
Sulfate	97	mg/L
Calcium	59	mg/L
Potassium	42	mg/L
COD	32	mg/L
Magnesium	15	mg/L
Dissolved Oxygen	11.1	mg/L
pH	8.8	standard units
Chloride	8.7	mg/L
Nitrate (as N)	2.4	mg/L
Total phosphorus (as P)	1.6	mg/L
ortho-Phosphate	1.1	mg/L
Fluoride	0.63	mg/L
Ammonia	0.42	mg/L
TKN	0.4	mg/L
Iron	0.35	mg/L
Nitrite (as N)	0.3	mg/L
Zinc	0.11	mg/L
Barium	0.038	mg/L
Copper	0.033	mg/L
Manganese	0.013	mg/L
Chlorine	0.01	mg/L
Lead	0.0015	mg/L
Selenium	0.00067	mg/L
Cadmium	0.00013	mg/L
Chromium	N.D. ^a	
Mercury	N.D.	
Silver	N.D.	
BOD	< 1.0	mg/L
TSS	< 1	mg/L
^a N.D. = non detect		

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The analyses indicate that pH, Iron, Total Dissolved Solids, and Total Coliform levels in the discharge exceed state ground water criteria. Also, the TDS concentration is higher than would be suggested from the reported excess concentrations of cations (sodium, potassium, calcium, and magnesium) over the concentrations of anions (sulfate, etc.) present in this wastewater sample. Elevated concentrations of bi-carbonate anions may be a reason for these results, which may be the result of water-softening chemicals introduced to the cooling water to control scaling.

PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology-based or water quality-based. Wastewater must be treated using all known, available, and reasonable methods of prevention, control and treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard have not been determined for this discharge.

TECHNOLOGY-BASED INTERIM AND FINAL EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring AKART for discharges to waters of the State (WAC 173-216-110). Control technologies exist that can modify the characteristics of the cooling wastewater discharge. Following the submittal of additional analyses of the cooling wastewater discharge (permit S2.A), the Department may require, by administrative order or permit modification, that AKART for land application be developed and applied.

GROUND WATER QUALITY-BASED INTERIM AND FINAL EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 3: Ground Water Quality Criteria

Parameter	Criterion
Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

The following analytes in the Permittee's effluent exceed ground water criteria: Total Dissolved Solids, Total Coliform, and Iron. These results are based on a single sample, obtained from the Chemical Analysis of Effluent Report, submitted in June 2003. In addition, based on the submitted DMRs, the cooling water discharge to the sprayfield routinely exceeds the ground water standard's upper pH limit which is 8.5. The maximum pH of the discharge was 9.0 S.U., as reported on the DMR's. The proposed permit therefore sets an interim upper limit of 9.0 S.U. for the discharge's pH.

The Department has reviewed existing records and is unable to determine if background ground water quality is either higher or lower than the criteria given in Chapter 173-200 WAC. The results of the ground water monitoring required by this permit, shall determine if ground water quality is being protected.

The interim effluent limits, based on past performance, are as follows:

Table 4: Interim Water Quality-based Limitations

Parameter	Limitation
pH	Shall not be outside the range of 6.5 to 9.0

The proposed permit requires quarterly sampling of effluent constituents to determine compliance with ground water standards (twice monthly pH sampling required). If after four quarters of monitoring, results of the analyses indicate continued exceedance of ground water criteria (WAC 173-200), the Department, by administrative order or permit modification, may require the submittal of an Abridged Engineering Report that develops AKART for the discharge. [Details of the Abridged Engineering Report may be found in Chapter 3 of *Guidelines*

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for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems.
May 1993. Ecology Publication #93-96]

Final effluent limits are to be determined upon analysis of submitted cooling blowdown water discharges.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED JUNE 12, 1998

Table 5: Comparison of Previous and New Limits

Parameter	Existing Limits	Proposed Interim Limits
pH	Not to be outside the range of 6.5 to 8.5	Not to be outside the range of 6.5 to 9.0 ^a
^a The proposed interim limit for pH is based on the 95 percentile of discharges reported in DMRs from January 2002 through June 2003.		

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

WASTEWATER MONITORING

The monitoring schedule is detailed in this permit under Special Condition S2.A. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

The permit requires four quarters of wastewater effluent monitoring. Then: a) if all parameters are less than State ground water standards, no further action beyond continued monitoring on a reduced schedule (if formally requested) is necessary, or b) if some parameters are greater than State ground water standards, an Abridged Engineering Report that develops AKART for this discharge shall be submitted to the Department. [Details of the Abridged Engineering Report may be found in Chapter 3 of *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems*. May 1993. Ecology Publication #93-96]

GROUND WATER MONITORING

The monitoring to protect ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that discharges at the site have a potential to pollute the ground water. Therefore, the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the Permittee's production well water within the site is the integral component of the evaluation (S2.B). The production water-well is located in just east of the facility's maintenance building. The well was drilled in 1990 and is 40 feet deep. The depth to water is listed as 19 feet on the well log.

Monitoring of the primary production area supply well for contaminants that may have escaped containment is required for four quarters. Then: a) if monitored parameters are non-detect or less than State ground water standards no further action beyond continued monitoring on a reduced schedule (if formally requested) is necessary, or b) if parameters monitored are detected or found to have a concentration greater than State ground water standards, then further action by the Department as detailed in Chapter 173-340 WAC and/or Chapter 173-200 WAC may be required.

SOIL MONITORING

The Chemical Analysis of Effluent Report revealed the effluent to have elevated levels of Total Dissolved Solids. The proposed permit requires annual soil monitoring to the sprayfield to determine if this discharge is detrimental to ground water quality (S2.C).

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of Special Condition S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-216-110). For any significant changes in loadings to the sprayfield, the permit requires a new application and an Engineering Report (WAC 173-216-110[5]).

OPERATIONS AND MAINTENANCE

The Permittee is responsible for the proper operation and maintenance of facilities and systems of control related to its effluent. The permit does not require the submittal of an O&M manual. However, should the nature or manner of the Permittee's effluent change, the Department may require, by administrative order or permit modification, the submittal of an O&M manual.

SPILL CONTROL PLAN

The Permittee shall submit an updated Spill Control Plan (S7). The Department has on file a Spill Prevention, Control, and Countermeasures Plan (May 1998), which was received by the Department on November 10, 1998. This document is focused on prevention of oil and petroleum products stored on the site. These petroleum products are utilized primarily for the company's trucking operations.

In addition to the petroleum products, the Department has determined that the Permittee stores a quantity of water soluble chemicals that have the potential to cause ground water pollution if accidentally released. In the previous ten years, there have been occasional documented spills of these chemicals. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080. The report shall also address preventing spills of process chemicals (liquid or solid) that have the potential to pollute ground water. The Report shall be developed according to the procedures set forth in Chapter 173-240 WAC.

GENERAL CONDITIONS

General Conditions are based directly on State laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for **five** years.

REFERENCES FOR TEXT AND APPENDICES

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

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APPENDIX A -- PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 24, 2002 in the Tri-City Herald to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on (date) in (name of publication) to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to: Water Quality Permit Coordinator, Department of Ecology, Central Regional Office, 15 West Yakima Avenue, Suite 200, Yakima, WA 98902.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105, or by writing to the address listed above.

This permit was written by Jim Leier.

APPENDIX B -- GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the Federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the eighty (85) percent removal requirement. Additional sampling may be conducted.

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Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and

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large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of thirty (30) semester hours or forty-five (45) quarter hours professional core courses in agronomy, crops or soils, and have five (5), three (3), or one (1) year(s), respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the State of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

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APPENDIX C -- TECHNICAL CALCULATIONS

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APPENDIX D -- RESPONSE TO COMMENTS

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